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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| EXAMINER | |
|---|---|
| DOUYON, LORNA M | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1751 | |

DATE MAILED: 10/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/774,783 | MUN ET AL. | |
| | Examiner | Art Unit | |
| | Lorna M. Douyon | 1751 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *24 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-5,7,9-21,24 and 27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7,9-21,24 and 27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. This action is responsive to the amendment filed on July 24, 2006.

2. Claims 1-5, 7, 9-21, 24 and 27 are pending.

3. The objection to the abstract of the disclosure is withdrawn in view of Applicants' amendment.

4. The rejection of claims 10, 12, 13, 17, 23, 25 and 26 under 35 U.S.C. 112, second paragraph is withdrawn in view of Applicants' amendment.

5. The rejection of claims 1-7, 9, 12, 14-20, 22, 25 and 27 under 35 U.S.C. 102(b) as being anticipated by Quinlan (US Patent No. 4,670,186) is withdrawn in view of Applicants' amendment.

6. The rejection of claims 15-18, 22-24 under 35 U.S.C. 102(b) as being anticipated by Sato et al. (US Patent No. 5,849,467) is withdrawn in view of Applicants' amendment.

7. The rejection of claims 1-7, 15-20 under 35 U.S.C. 102(b) as being anticipated by Schafer-Burkhard (US Patent No. 4,311,618) is withdrawn in view of Applicants' amendment.

8. The rejection of claims 1-2, 4, 6, 9, 12-15, 17, 19, 22, 25-27 under 35 U.S.C. 102(b) as being anticipated by Otrhalek et al. (US Patent No. 4,032,466) is withdrawn in view of Applicants' amendment.

9. The provisional rejection of claims 2-3, 5, 15, 16 and 18 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 4-5 of copending Application No. 10/982,406 is withdrawn in view of Applicants' amendment.

10. The provisional rejection of claims 1-3, 5, 15, 16 and 18 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9, 10 of copending Application No. 11/038,585 is withdrawn in view of Applicants' amendment.

11. Claim **27** is rejected under **35 U.S.C. 112, second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention

Claim 27 lacks support for "the acid solution" (see lines 1-2) with respect to claim 15 to which this presently amended claim is dependent upon. Please note that claim 15 makes no reference to "an acid solution" but an "alkaline solution". It is suggested that this claim be deleted.

12. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

13. Claims 1-5, 7, 9, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Quinlan (US Patent No. 4,670,186).

Quinlan teaches an acid inhibitor composition comprising polyamine, alkynol and a surfactant (see abstract). In Example 24, Quinlan teaches a corrosion inhibiting formulation comprising 15% by weight propargyl alcohol (also known as 2-propyn-1-ol), 15% by weight dodecyl alcohol + 20 mols ethylene oxide (which meets the recited formula for the surfactant) and 10% by weight water (see Table under cols. 7-8). This formulation is employed to inhibit corrosion in a 5% hydrochloric acid solution and the inhibitor formulation was employed at 0.1% by volume (see col. 8, lines 62-68). A 0.1% by volume of the above inhibitor would still result in propargyl alcohol and surfactant concentration in amounts within those recited, i.e., 0.00015% by weight each of propargyl alcohol and above surfactant. Another alkynol used is butynediol (also known as 2-butyne-1,4-diol) (see col. 2, line 52). In addition, Quinlan teaches suitable surfactants which are oxyalkylated surfactants having alkylene oxide like ethylene oxide from 1 to 2000 (see col. 3, lines 43-57). Quinlan, however, fails to disclose a dodecyl alcohol + (5-15) mols ethylene oxide.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the portion of the prior art's range which is within the range of applicant's claims because it has been held to be obvious to select a value in a known range by optimization for the best results, As to optimization results, a patent will not be granted based upon the optimization of result effective variables when the optimization is obtained through routine experimentation unless there is a showing of unexpected results which properly rebuts the *prima*

*facie* case of obviousness. See *In re Boesch,* 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). See also *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990), and *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In addition, a *prima facie* case of obviousness exists because the claimed ranges "overlap or lie inside ranges disclosed by the prior art", see *In re Wertheim,* 541 F.2d 257, 191 USPQ 90 (CCPA 1976; *In re Woodruff,* 919 F.2d 1575, 16USPQ2d 1934 (Fed. Cir. 1990). See MPEP 2131.03 and MPEP 2144.05I.

14. Claims 1-2, 4, 7, 9, 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otrhalek et al. (US Patent No. 4,032,466), hereinafter "Otrhalek".

Otrhalek, in Example 1, teaches an acid cleaner comprising 47.77 parts (wt%) of water, 3 parts (wt%) oxalic acid, 12 parts (wt%) of alpha-alkyl ($C_{12}$-$C_{18}$) omega-hydroxy poly(oxyethylene) with the poly(oxyethylene) content averaging 9 moles, a nonionic surfactant of the ethoxylated monohydric alcohol type (which meets the recited formula for the surfactant), 25.2 parts(wt%) of 37 percent hydrochloric acid and 0.13 part (wt%) of propargyl alcohol (also known as 2-propyn-1-ol), see col. 8, line 64 to col. 9, line 12. In addition, Otrhalek teaches that the nonionic surfactant is present in an amount from about 7 to about 23 weight percent of the final composition (see col. 4, lines 13-16). Other suitable nonionic surfactants include fatty alcohols like dodecyl alcohol condensed with 5 to 30 moles of ethylene oxide (see col. 5, lines 53-61). Otrhalek, however, fails to specifically disclose the nonionic surfactant in amounts as those recited and wherein the nonionic surfactant is a dodecyl alcohol surfactant condensed with 5 to 15 moles of ethylene oxide.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the portion of the prior art's range which is within the range of applicant's claims because it has been held to be obvious to select a value in a known range by optimization for the best results. As to optimization results, a patent will not be granted based upon the optimization of result effective variables when the optimization is obtained through routine experimentation unless there is a showing of unexpected results which properly rebuts the *prima facie* case of obviousness. See *In re Boesch,* 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). See also *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990), and *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In addition, a *prima facie* case of obviousness exists because the claimed ranges "overlap or lie inside ranges disclosed by the prior art", see *In re Wertheim,* 541 F.2d 257, 191 USPQ 90 (CCPA 1976; *In re Woodruff,* 919 F.2d 1575, 16USPQ2d 1934 (Fed. Cir. 1990). See MPEP 2131.03 and MPEP 2144.05I. Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected dodecyl alcohol condensed with 5 to 15 moles of ethylene oxide as the specific nonionic surfactant because this is one of the suitable nonionic surfactants taught by Otrhalek.

15. Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otrhalek as applied to the above claims, and further in view of Quinlan.

In addition, Otrhalek teaches that in certain cases, such as where unpainted metals are being washed, it is important to include a corrosion inhibitor and any of the well-known corrosion inhibitors are suitable for the purpose (see col. 7, lines 43-48). Otrhalek, however, fails

to disclose a corrosion inhibitor such as 2-butyne-1,4-diol, that is, in the recited formula, $R_1$ is OH.

Quinlan teaches the equivalency of propargyl alcohol with butynediol (i.e., 2-butyne-1,4-diol) as corrosion inhibitors in a similar composition (see col. 2, lines 50-54).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute propargyl alcohol with 2-butyne-1,4-diol because Otrhalek desires any well known corrosion inhibitor and Quinlan teaches the well-known 2-butyne-1,4-diol as corrosion inhibitor as well as its equivalency with propargyl alcohol.

16. Claims 1-5, 7, 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu et al. (US Patent No. 5,817,252), hereinafter "Hu".

Hu teaches a deicing and anti-icing composition for aircraft which comprises 20 wt% to 65 wt% water, 1 ppm to 0.5 wt% nonionic surfactant which can be alkoxylated derivatives of alcohols having the general formula $(C_nH_{(2n+1)}O\text{-}(C_2H_4O)_x\text{-}H$ where n = ≥1, x = moles of EO ≥1, 1 ppm to 1 wt% pH control agents such as potassium hydroxide and sodium hydroxide (see col. 3, line 46 to col. 5, line 8), and may also contain 1 ppm to 1.0 % by weight anti-corrosion compounds, one of which is butyne-1,4 diol (see col. 6, lines 21-26). Hu, however, fails to specifically disclose a cleaning composition comprising water, the recited surfactant and corrosion inhibitor or a cleaning composition comprising a corrosion inhibitor like butyne-1,4 diol in amounts as those recited.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to prepare a composition comprising water, alkoxylated nonionic surfactant, for

example dodecyl alcohol with EO ≥1, potassium or sodium hydroxide, butyne-1,4 diol in their optimum proportions because the teachings of Hu encompass these ingredients and proportions and wherein the combination of these ingredients apparently controls the diffusion rate of water into and throughout a thin film of the composition mixture, thereby retarding the onset and progression of freezing as taught by Hu in col. 6, lines 50-54.

17. Claims 15-18 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable Sato et al. (US Patent No. 5,849,467), hereinafter "Sato".

Sato teaches an aqueous cleaning solution to effect dissolution of a photoresist layer which consists essentially of (a) a mixture of water and a water-miscible organic solvent as an aqueous medium and (b) a water-soluble alkaline compound dissolved in the aqueous medium (see col. 2, lines 51-55). The water-soluble alkaline compound can be an inorganic compound such as ammonia water (which is ammonium hydroxide) (see col. 4, lines 9-17), and is present in the aqueous cleaning solution in the range from 0.05 to 20% by weight (see col. 4, lines 59-62). Though optional, an anti-corrosion agent can be added to the aqueous cleaning solution and suitable compounds are alkynol compounds wherein 2-butyn-1,4-diol is preferred (see col. 5, lines 5-12; 23-28). The anticorrosion agents can be contained in the aqueous cleaning solution in a concentration in the range from 0.01 to 10% by weight (see col. 5, lines 36-40). Sato, however, fails to specifically disclose an aqueous cleaning solution comprising ammonia water or ammonium hydroxide and 2-butyn-1,4-diol.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to prepare an aqueous cleaning solution comprising ammonia water or ammonium

hydroxide and 2-butyn-1,4-diol because the teachings of Sato encompass the combination of these ingredients.

18. Claims 15-18 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato in view of Takashima (US 2004/0142835.

Sato teaches the features as described above. Sato, however, fails to disclose an alkaline chloride in the cleaning solution.

Takashima teaches a washing liquid for a semiconductor substrate which comprises in addition to ammonium hydroxide, an ammonium chloride (an alkaline chloride), to stabilize the pH of the solution (see paragraph 0046 on page 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the ammonium chloride into the composition of Sato because this will stabilize the pH of the solution as taught by Takashima.

19. Claims 1-5, 7, 9-11 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato; or Sato in view of Takashima as applied to claims 15-18 and 24 above, and further in view of Chu (US Patent No. 6,379,875).

Sato; or Sato in view of Takashima teach the features as described above. In addition, Sato teaches that a small amount of a surface active agent like nonionic surface active agents can be added to the composition to improve the wettability of the resist surface with the cleaning solution or to adjust the surface tension of the solution (see col. 5, lines 41-48). Sato; or Sato in

view of Takashima, however, fails to disclose the recited surfactant in particular, $C_{12}H_{25}O(CH_2CH_2O)_jH$, wherein j is 5-15.

Chu teaches, in an analogous art, teaches nonionic surfactants such as fatty alcohol ethoxylates with a saturated hydrocarbon chains having 8 to 24 carbon atoms and a degree of ethoxylation of 2 to 20, in an amount from about 0.1 to about 10% of the total weight of the composition (see col. 5, lines 4-23).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the fatty alcohol ethoxylates of Chu which has 8 to 24 carbon atoms and a degree of ethoxylation of 2 to 20, say for example, a C12 carbon atom with a degree of ethoxylation of 5-15, into the cleaning solution of Sato; or Sato in view of Takashima because Sato specifically desires nonionic surfactants in his cleaning solution and Chu teaches such surfactants.

***Response to Arguments***

20. Applicants' arguments filed July 24, 2006 have been fully considered but they are not persuasive.

With respect to the obviousness rejection based upon Quinlan, Applicants argue that Quinlan describes non-ionic surfactants such as dodecyl alcohol + 20 mols ethylene oxide, dinonylphenol + 18 mols ethylene oxide, nonylphenol + 15 mols ethylene oxide, stearylamine + 25 mols ethylene oxide and nonylphenol + ethylene oxide (see table in cols. 7 and 8), and none of the surfactants described in Quinlan, including those mentioned above, fall within the specific surfactant recited in claim 1.

The Examiner respectfully disagrees with the above argument because in col. 3, lines 43-57, Quinlan teaches suitable surfactants which are oxyalkylated surfactants having alkylene oxide like ethylene oxide from 1 to 2000. Even though dodecyl alcohol + 20 mols ethylene oxide is exemplified , and not with 5-15 mols ethylene oxide, a reference is not limited to the working examples, see *In re Fracalossi*, 215 USPQ 569 (CCPA 1982). The 5-15 ethylene oxide units of the present claims are inside the range of the ethylene oxide units of Quinlan. Absent unexpected results, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the portion of the prior art's range which is within the range of applicant's claims because it has been held to be obvious to select a value in a known range by optimization for the best results. In addition, a *prima facie* case of obviousness exists because the claimed ranges "overlap or lie inside ranges disclosed by the prior art", see *In re Wertheim,* 541 F.2d 257, 191 USPQ 90 (CCPA 1976; *In re Woodruff,* 919 F.2d 1575, 16USPQ2d 1934 (Fed. Cir. 1990). See MPEP 2131.03 and MPEP 2144.05I. Also, all disclosures of the prior art, including non-preferred embodiment, must be considered. See In re Lamberti and Konort, 192 USPQ 278 (CCPA 1967); In re Snow 176 USPQ 328(CCPA 9173). Nonpreferred embodiments can be indicative of obviousness, see *Merck & Co. v. Biocraft Laboratories Inc.* 10 USPQ 2d 1843 (Fed. Cir. 1989); *In re Lamberti*, 192 USPQ 278 (CCPA 1976); *In re Kohler,* 177 USPQ 399.

With respect to the obviousness rejection based upon Otrhalek, Applicants argue that Otrhalek generally mentions that its cleaning solutions may include ethoxylated monohydric alcohol surfactants (see col. 9, lines 1-3), however, Otrhalek at the very least fails to teach or suggest a cleaning solution which includes the specific surfactant which is $C_{12}H_{25}O(CH_2CH_2O)_jH$, wherein j is 5-15 as recited in claim 1.

The Examiner respectfully disagrees with the above argument because in col. 5, lines 53-61, Otrhalek teaches suitable nonionic surfactants which include fatty alcohols like dodecyl alcohol condensed with 5 to 30 moles of ethylene oxide (see col. 5, lines 53-61). The 5-15 ethylene oxide units of the present claims are inside the range of the ethylene oxide units of Otrhalek. As stated above, a *prima facie* case of obviousness exists because the claimed ranges "overlap or lie inside ranges disclosed by the prior art".

With respect to the obviousness rejection based upon Hu, Applicants argue that the Hu reference generally mentions that its cleaning solutions may include alkoxylated derivatives of alcohols as surfactants (see col. 5, lines 55-61), and Hu fails to teach or suggest a cleaning solution which includes the specific surfactant which is $C_{12}H_{25}O(CH_2CH_2O)_jH$, wherein j is 5-15 as recited in claim 1.

The Examiner respectfully disagrees with the above argument because in col. 3, line 46 to col. 5, line 8 Hu teaches nonionic surfactant which can be alkoxylated derivatives of alcohols having the general formula $(C_nH_{(2n+1)}O-(C_2H_4O)_x-H$ where n = ≥1, x = moles of EO ≥1. $C_{12}H_{25}O(CH_2CH_2O)_jH$, wherein j is 5-15 would fall into this formula. As stated above, a *prima facie* case of obviousness exists because the claimed ranges "overlap or lie inside ranges disclosed by the prior art".

The showing on pages 10-12 of the specification has been carefully considered, however, the showing is not commensurate in scope with the claims. The showing is only limited to those specific ingredients recited in Cleaning Solution 4.

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The reference is considered cumulative to or less material than those discussed above.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lorna M. Douyon whose telephone number is (571) 272-1313. The examiner can normally be reached on Mondays-Fridays from 8:00AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas McGinty can be reached on (571) 272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lorna M. Douyon
Primary Examiner
Art Unit 1751